AMENDMENTS TO THE SPECIFICATION

Please replace the paragraph beginning at page 1, line 7, with the following amended paragraph:

Hydroplaning is a phenomenon in which a wedge of water is created between the road surface and tires during a high speed driving on a wet road surface so that vehicle tires are lifted and lose their contact with the road surface (see FIG. 9). Also, hydroplaning is a phenomenon in which tires are very slippery with their contact with a road surface lost by a hydrodynamic pressure of water that is created when tires can not remove water during a high speed driving on a wet road surface. This is schematically shown in FIG. 9(b). Water film penetrates as a wedge between the tire and the road surface so as to create a force Fu in a direction to lift the tire and a force Dr in a direction to decrease the rotation speed VF of the tire. Because hydroplaning is a serious problem for a safety drive on a ~~high-way~~ highway or ~~express-way~~ expressway, various techniques ~~haven~~ have been attempted to detect hydroplaning.

Please replace the paragraph beginning at page 12, line 6, with the following amended paragraph:

Detection values Vf, Vr from the wheel speed sensors VSf, VSr vary because of a road bump, etc. (roughness or level difference on the road surface). Such a change first appears in the detection values Vf at the front wheel sensor VSf and then appears in the detection values Vr at the rear wheel sensor VSr, if the vehicle runs in the advance direction. In this instance, if the time interval between the changes of the detection values Vf, Vr derived from the same level difference, i.e., time lag for the phase difference between change patterns of the front and rear wheel speeds Vf, Vr, can be obtained, it is possible to ~~calculates~~ calculate vehicle speed (first vehicle speed Vv1) from the wheel base (reference distance) WB of the vehicle C.

Please replace the paragraph beginning at page 12, line 18, with the following amended paragraph:

Because the ~~fist~~ first vehicle speed Vv1 is obtained by additionally taking into consideration the front wheel speed Vf that is subject to hydroplaning, once hydroplaning occurs, the first vehicle speed Vv1 does not ~~indicates~~ indicate a correct value. However, the first vehicle speed Vv1 is obtained based on a road bump, etc. Therefore, when the first vehicle speed Vv1 is subject to hydroplaning, ~~but~~ it is not subject to a road bump, etc. Hydroplaning does not usually occur at a rough road with full of rod bumps, etc. According to this preferred embodiment, by utilizing the characteristics of the first and second vehicle speeds Vv1, Vv2, detection of hydroplaning can be made without confusing with a road bump, etc.

Please replace the paragraph beginning at page 14, line 18, with the following amended paragraph:

The data buffer 123 (123f, 123r) is a read/write memory for ~~temporally~~ temporarily storing a predetermined number of detection values V (Vf, Vr). Reading and writing the data can be performed through the buffer controller 122 (122f, 122r). Detection values V (Vf, Vr) are stored in the data buffer 123 in association with process counters n, m, each of which counts the number of processes. To be more specific, detection values Vf for the front wheel side are stored in the data buffer 123f as array variables Vf(n) in association with the process counter n, and detection values Vr for the rear wheel side are stored in the data buffer 123r as array variables Vr(m) in association with the process counter m. The data buffer 123 is a FIFO (First In First Out).

Please replace the paragraph beginning at page 19, line 13, with the following amended paragraph:

The cross-correlation function calculation means 125 calculates (executes) cross-correlation functions in a sort of Fourier transformation. Specifically, the cross-correlation function calculation means 125 processes to determine how (at which point) the change pattern derived from the road bump, etc., ~~that is appeared~~ appears at the front wheel Wf within 150 milliseconds and then appears at the rear wheel Wr within 290 milliseconds. Therefore, the cross-correlation function calculation means 125 receives the whole array variables Vf(n), Vr(m) that have been normalized by the normalization means 124 (124f, 124r), and executes the convolution shown by the following equations (5) through (19). Equations (8) to (18) are omitted.

$$S(1) = Vf(1) \cdot Vr(1) + Vf(2) \cdot Vr(2) + ... + Vf \cdot Vr \quad (5)$$

$$S(2) = Vf(1) \cdot Vr(2) + Vf(2) \cdot Vr(3) + ... + Vf \cdot Vr(17) \quad (6)$$

$$S(3) = Vf(1) \cdot Vr(3) + Vf(2) \cdot Vr(4) + ... + Vf \cdot Vr \ (18) \quad (7)$$

... ...

$$S(15) = Vf(1) \cdot Vr(15) + Vf(2) \cdot Vr(16) + ... + Vf \cdot Vr(30) \quad (19)$$

Please replace the paragraph beginning at page 21, line 11, with the following amended paragraph:

The time difference Δt corresponds to the term "time difference from a coincidence of the change patterns". The value "10" ~~appeared~~ appearing in the equation (21) indicates the sampling interval for each detection value Vf, Vr. The reason for subtracting 1 from the index j is to obtain the interval number.